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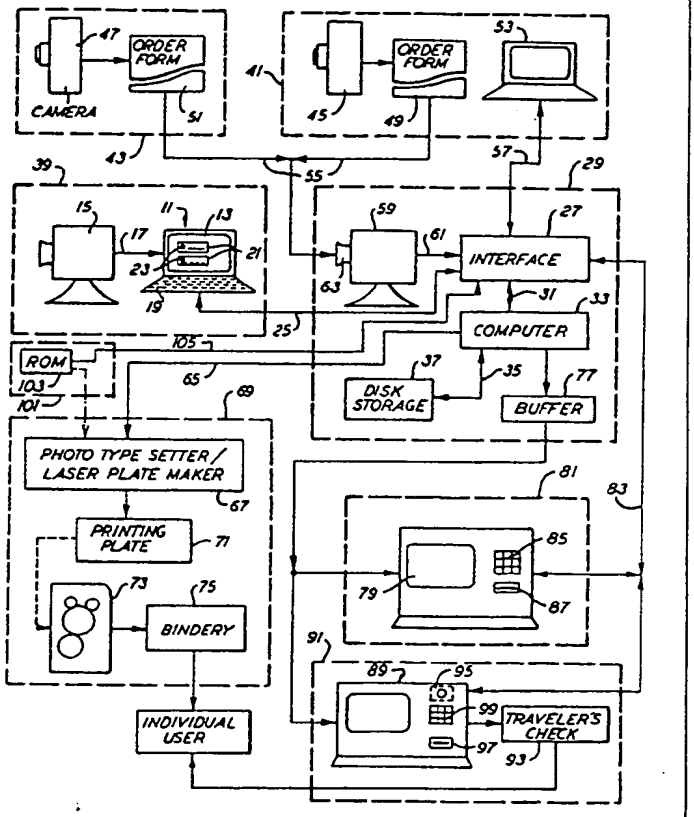
(54) Title: METHOD AND APPARATUS FOR PREPARING A CHECK, MONEY ORDER OR CREDIT CARD

(57) Abstract

In a method for preparing a check, money order or credit card (93), a series of signals coding a pictorial image of an individual's face is generated by a video camera (15) or digital scanner (59) and stored in digital form in a memory (37) for producing on a web the pictorial facial image of the individual. The memory also stores additional information pertaining to the individual user, such as his name, address and account numbers, this additional information also being electronically transmittable to a printing facility for conversion into legible or machine-readable form in conjunction with the pictorial image of the user. The signals coding the individual user's facial image are transmittable to remote CRT monitors at retail outlets for enabling comparison of the picture-quality facial image with the visage of a person tendering a purchase instrument such as a check, money order to credit card.



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METHOD AND APPARATUS FOR PREPARING A CHECK, MONEY ORDER OR CREDIT CARD

Background of the Invention

This invention relates generally to a method and apparatus for facilitating the verification of the identity of a person tendering an instrument, such as a check, money order or credit card, as a means of payment for goods or services. More particularly, this invention relates to a method and apparatus for preparing such a purchase instrument and to a purchase instrument produced by the inventive method and apparatus. This invention further pertains in particular to a method for verifying that a person attempting to make a purchase of goods or services by tendering a purchase instrument such as a check, credit card or money order is in proper possession of the tendered purchase instrument.

In order for a merchant to be protected from fraud in accepting a purchase instrument such as a personal check or a credit card as a means of payment for goods

or services, it is necessary for the merchant to accurately determine that the purchase instrument is in proper possession of the person tendering the instrument. Such a determination is facilitated if the instrument itself bears some sort of indicia identifying the instrument with the individual.

As disclosed in U.S. Patent No. 3,805,238, an identification card for establishing a person's identity may be provided with the facial features of the individual and, preferably, features which remain constant for many years. That patent is directed to a method of identifying individuals which comprises photographing the face of the person concerned and deriving from the photograph a curve portraying, for example, the outer contours of the face. The derived curve may be stored in the memory of a data processing apparatus and subsequently projected onto a remote glass screen for comparison with the facial contours of a person tendering an identification card which bears the likeness of an individual and a curve derived from a facial feature or contour of the likeness. The screen onto which the derived curved is projected is a vertical screen behind which the person tendering the identification card stands.

An object of the present invention is to provide a method and an associated apparatus for preparing purchase instruments, such as checks, credit cards, traveller's checks or money orders, which are provided

with highly reliable indicia of identification.

Another object of the present invention is to provide such a method and such an apparatus which are readily usable or accessible by that portion of the financial industry servicing individual consumers.

Yet another, more particular, object of the present invention is to provide a check with improved identification indicia.

Yet another object of the present invention is to provide an improved method for verifying the identity of an individual tendering a purchase instrument, such as a check or credit card, in payment for goods or services at a retail or wholesale establishment.

Summary of the Invention

In accordance with the present invention, a method for preparing an instrument, such as a check, money order or credit card, usable for the purchase of goods and services comprises the steps of (a) generating a series of signals coding a pictorial or picture-quality image of a feature of an individual, (b) transmitting the signals to a memory, preferably a central memory, (c) storing the signals in digital form in the memory, (d) retrieving the signals from the memory, (e) transmitting the signals from the memory to a machine for producing visually detectable patterns on a web, and (f) operating the machine to produce on the web, in a visually detectable form, the pictorial image of the feature of the individual in accordance with the signals

transmitted from the memory. The web may be a sheet of paper provided with, in addition to the pictorial image of the individual's feature, printed alpha-numeric characters setting forth the name and address of the individual and, perhaps, the name and address of a drawee institution in the case that the sheet takes the form of a blank check. The web may also be a plastic sheet to be incorporated into a laminated identification or credit card.

Preferably, the digitally stored and reproduceable feature of the individual user is the face of the individual. It is also preferable that the signature of the individual is digitally stored in the memory for subsequent reproduction on the web together with the pictorial facial image of the individual. In addition, it is to be noted that a purchase instrument in accordance with the invention may be advantageously provided with pictorial facial images and signatures of two or more individuals, e.g., in the case of a joint checking account.

The series of signals coding the pictorial image of the individual's face (or individuals' faces in the case of a dual party check or traveller's check) may be generated by using a video camera to optically scan the individual's face. Alternatively, the video camera or a digital scanner may be used to optically scan a photograph of the individual, the video camera or digital scanner being operatively connected to the

memory for transmitting thereto the signals digitally coding the pictorial facial image of the individual. As yet another alternative, the series of signals coding the pictorial image of the individual's face may be generated by reading or retrieving the signals from a read-only memory incorporated in an identification or credit card carried by the individual.

In accordance with a particular embodiment of the present invention, the video camera or the read-only memory is operatively connected to a color CRT monitor, the image of the individual being displayed on the monitor superimposed on an image of purchase instrument such as a check, money order or credit card. Preferably, the monitor is operatively connected to a memory which registers or stores signals digitally coding different formats of the purchase instrument. An input component such as a keyboard is operatively connected to the memory or register for changing the format of the purchase instrument displayed on the monitor or for displaying several formats of the purchase instrument simultaneously. The operation of the input component to control the display of different formats of the purchase instrument on the monitor with a superimposed picture of the individual facilitates the choice by the individual of a preferred format, e.g., a preferred check style.

In accordance with yet another particular feature of the present invention, additional signals are

transmitted to the central memory for storing therein information relating to the format of the purchase instrument (i.e., the check) selected by the individual, as well as the name and address of individual. Other information, such as a number of checks being ordered, may also be communicated electrically to the memory. The additional signals may likewise be transmitted from the central memory to a peripheral unit such as a photo typesetting printing machine for producing a check having the selected format, the name, the address and the pictorial image of the individual user.

A method in accordance with the present invention facilitates the preparation of purchase instruments such as checks by simplifying and streamlining the entire process, from check format selection through the printing of the checks. Moreover, new batches of checks may be easily produced by simply retransmitting to the printing apparatus the digitally encoded information stored in the central memory unit.

In accordance with a further feature of the invention, the stored image of the individual may be transmitted from the central memory to remote CRT monitors for enabling a visual comparison of the picture-quality facial image with the visage of a person attempting to make a purchase by tendering a purchase instrument. The remote CRT monitor is locatable on the premises of a retail merchant. The transmission of the pictorial image from the central memory is initiated by

the transmission of an alpha-numeric identification code from the remote station to the central memory. The identification code is supplied to the merchant by the person tendering the purchase instrument.

Access to the central memory is controlled by a computer or central processing unit in accordance with programming techniques which are well-known in the programming arts.

In the case that the pictorial image of the individual is stored in digitally encoded form in a read-only memory incorporated in an identification or credit card, the stored signals may be read electronically at a retail establishment and used to generate the individual's pictorial image on a CRT monitor for enabling comparison of the image with the individual tendering the card. In addition, the image stored in the ROM may be transmitted directly to a printing facility (rather than indirectly through the central memory) to enable the production of checks.

Brief Description of the Drawing

The sole Figure of the drawing is a schematic flow chart showing the flow of information in accordance with the method and apparatus of the present invention.

Detailed Description

A method and apparatus in accordance with the present invention produces a purchase instrument such as a check or credit card which provides for enhanced security for both the individual user and the retail

merchant who accepts the purchase instrument as a means of payment for goods or services.

In accordance with the method and apparatus contemplated by the present invention, an individual user or customer enters a bank or other financial institution with which he or she has a working relationship. Upon expressing an interest in ordering new checks, the individual is directed by a bank officer or other employee of the financial institution to a personal computer 11 having a color monitor 13.

The customer poses in front of a video camera 15 operatively connected by means of a lead 17 to the personal computer 11. The bank employee operates the personal computer 11 via the keyboard input 19 thereof to display on the color monitor 13 one or more possible check formats with the customer's picture 23 in proper position on the displayed checks. From the check display, the customer chooses one or more desired check styles or formats. This information may be entered into the memory of the personal computer 11 via keyboard 19. Further information, such as the customer's name, address, banking accounts and numbers of checks ordered by the customer, are also fed to the personal computer 11 via keyboard 19.

Upon the completed placement of the order, all of the stored order information, including signals digitally encoding the pictorial image of the customer, is transmitted over a communications link 25 to an

interface or buffer register 27 at a central data processing facility 29. Preferably, the transmitted information also includes the digitally encoded signature of the customer. The signature may be scanned by the video camera 15 and converted thereby into a series of digital signals temporarily stored in personal computer 11 prior to transmission over communications link 25 to central data processing facility 29.

Buffering interface 27 is connected by means of a bidirectional multiple 31 to a computer or central processing unit 33. Computer 33 is in turn connected via a bidirectional multiple 35 to a disc storage unit 37. Upon the reception of the order information from remote personal computer 11 by the buffering interface 27, computer 33 transfers the information to disc storage unit 37 via multiple 35. Computer 33 may also transmit information to personal computer 11 via multiple 31, interface 27 and communications link 25. Such information may be transmitted in response to a query from the bank employee taking the order.

Video camera 15 and personal computer 11 represent a fully automated order-taking station 39. The invention, however, also contemplates that central data processing facility 29 may receive order information from a semi-automated station 41 and/or a manual order-taking station 43. In each of these cases, the individual customer has his or her picture taken by an instant camera 45 or 47. If the picture is of suitable

quality, it is attached, e.g., with a self-adhesive backing, to an order form 49 or 51. The order form is also filled out with other necessary information, e.g., with the customer's name and address, the desired number of checks and the check format or style chosen by the customer. At the semi-automated station or branch 41 a personal computer 53 is provided by means of which the employee of the financial institution taking the check order may communicate with central processing unit 33 for obtaining information pertaining to the customer.

Order forms 49 and 51 are mailed from remote stations 41 and 43, as indicated by arrows 55, to the central data processing facility 29. In addition, order information can be transmitted via a telecommunications link 57 from personal computer 53 at semi-automated station 41 to interface 27 at the central data processing facility. In this case the information from order form 49 may be matched for audit purposes with the information transmitted electronically from personal computer 53.

The photographs on order forms 49 and 51 are scan digitized by a video camera or digital scanner 59 which is operatively coupled to interface 27 via a lead 61 for transmitting thereto digital signals coding the facial image of the individual customer, as taken from the photograph mailed with the respective order form 49 or 51. A series of photographs may be conveyed along a path in front of the lens 63 of video camera or digital

scanner 59 by means of a form feeder (not illustrated) in order to speed the processing of orders. Video camera or digital scanner 51 also advantageously scans customer signatures on order forms 49 and 51, digital signals coding the signatures being stored by computer 33 in disc storage unit 37 together with the picture-coding signals and other pertinent information.

Central processing unit or computer 33 may be programmed to process the check orders in accordance with check style, number of checks and turn-around requirements. Orders that match can be grouped into sets of 12 or 16 in order to complete a printing plate or film.

As illustrated in the drawing, computer 33 has an output lead 65 extending to a type setting machine 67 such as a phototypesetter or laser platemaker at a printing facility 69. The type setting equipment produces a film or plate 71 mountable on an offset press 73 for producing the ordered number of checks. The checks are bound into books by a binding machine 75 and then shipped to the individual for ultimate disposition.

Computer 33 retrieves information stored in unit 37 and transmits the retrieved information to the printing facility 69, the transmitted information including the digital signals coding the pictorial representation of the individual customer's face.

Type setting machine 67 may itself be an automated device including a computer control (not illustrated).

In such a case, computer 33 transmits printing instructions to the computer control of the type setting machine.

The preparation of checks in accordance with the invention is facilitated by the fact that the individual user would have to submit his or her picture only once, the digitally stored picture being used to generate new checks upon request. The picture is stored in the processing system for reorders along with the electronic data pertaining to the person's name, address and other information necessary for processing financial transactions.

It is to be noted that the picture of the individual could be printed on the back of a check as well as on the front side thereof. The checks would be provided with the pictorial images on the back side, for example, if required to conform with banking regulations. Moreover, the checks, whether in the form of personal, business or traveller's checks, may be provided with the pictures of two or more individuals, e.g., in the case of a joint banking account. Each picture may in such a case be paired with an associated reproduced signature of the respective individual.

Computer 33 is advantageously connected via a buffer unit or output port 77 to a CRT monitor 79 at a retail outlet 81, whereby, in response to a request transmitted to the computer via a bidirectional communications link 83, interface 27 and multiple 31,

the digital signals coding the pictorial facial image of the customer may be transmitted to the CRT monitor 79 for display thereon. The displayed pictorial facial image can then be compared by the retail merchant with the visage of an individual tendering a purchase instrument such as a check or a credit card. In order to elicit the display from the central data processing facility 29, the merchant enters information, including an identification code, via a keyboard 85 or inserts the credit card or other identification card of the prospective customer into the slot of a card reader 87.

The digital signals coding an individual customer's pictorial facial image may also be transmittal by computer 33 from disc storage unit 37 via buffer 77 to an automatic teller machine 89 at a remote banking facility 91. The automatic teller machine 89 may be provided with matrix, laser or other printing equipment for producing travelers checks 93 with the pictorial image and signature of a customer(s) in accordance with signals transmitted from computer 33.

Pursuant to the present invention, the automatic teller machine 89 may be provided with a digitizing camera 95 for taking a picture of a customer's face upon the customer's insertion of a banking or credit card with a magnetic identification strip into a card slot 97 in machine 89. The camera generates a series of digital signals coding the pictorial facial image of the individual customer and transmits the signals to a

microprocessor (not illustrated) at the automatic teller machine for temporary storage in a local memory unit (not illustrated). Upon obtaining requisite information from the customer via a keyboard 99, i.e., information such as total amount and denominations of traveller's checks, the microprocessor causes the picture to be printed in an appropriate size and location on the blank traveller's checks. It is clear that the microprocessor and memory of the local teller machine 89 function in the same way as computer 33 and disk storage unit 37 with respect to information flow, storage and retrieval. The teller machine 89 may also be provided with an electronic stylus (not illustrated) for enabling the microprocessor to digitize the customer's signature and to reproduce the signature in a predetermined size and at a preselected position on the traveller's checks.

In accordance with a feature of the present invention, an individual may be provided with a personal identification card or credit card 101 which incorporates a read-only memory (ROM) 103. Stored in the read-only memory are digital signals encoding a picture-quality image of the individual's face. A retailer may confirm the identity of a person tendering the credit card or a check or other instrument by inserting the personal identification card 101 of the person into card reader slot 87, operating the CRT monitor 79 to display the stored picture-quality image of the person on the CRT screen, and comparing the

displayed image with the person's visage. Read-only memory 103 in identification card 101 is provided with terminals (not illustrated) engageable with respective contacts (not illustrated) in card reader slot 87 for enabling the reading or retrieving of the stored signals from the read-only memory. In addition, identification card 101 may be inserted into slot 97 of automatic teller machine 89, the stored pictorial-quality image of the individual being read from the read-only memory for purposes of printing traveler's checks 93. As schematically illustrated in the drawing, read-only memory 103 may be operatively connected via a telecommunications link 105 to interface 27, whereby the signals stored in the memory are transmittable to central data processing facility 29 for storage in disc storage unit 37 and for subsequent transmission exemplarily to type setting machine 67. The individual's facial image may be loaded into read-only memory 103 by any one of several methods discussed hereinabove. For example, the digital signals may be produced at the output of a video camera or at the output of a digital scanner.

In view of the extensive use of computers in both the printing industry and in the financial field, for example, to store, process and transmit information pertaining to customers' accounts, the programming of computer 33 to implement the flow of information described herein is clearly well within the capability,

experience and knowledge of one skilled in the art.

Although the invention has been described in terms of particular embodiments and applications, one of ordinary skill in the art, in light of this teaching, can generate additional embodiments and modifications without departing from the spirit of or exceeding the scope of the claimed invention. Accordingly, it is to be understood that the descriptions and illustrations herein are proffered by way of example to facilitate comprehension of the invention and should not be construed to limit the scope thereof.

WHAT IS CLAIMED IS:

1. A method for preparing an instrument, selected from the group including a check, a money order and a credit card, usable for the purchase of goods and services, said method comprising the steps of:

generating a series of signals coding a pictorial image of a feature of an individual;

transmitting said signals to a memory;

storing said signals in said memory;

retrieving said signals from said memory;

transmitting said signals from said memory to machine means for producing visually detectable patterns on a web; and

operating said machine means to produce on a web, in a visually detectable form, the pictorial image of said feature of said individual in accordance with said signals transmitted from said memory.

2. The method defined in claim 1 wherein said feature includes the face of the individual.

3. The method defined in claim 2 wherein said step of generating comprises the step of using a digital scanner to optically scan a photograph of the face of said individual.

4. The method defined in claim 3 further comprising the

steps of using said digital scanner to optically scan a signature of said individual and to generate a series of additional signals coding said signature, transmitting said additional signals to said memory, storing said additional signals in said memory, retrieving said additional signals from said memory, transmitting said additional signals to said machine means, and operating said machine means to produce on said web a copy of said signature in accordance with said additional signals.

5. The method defined in claim 2 wherein said signals are generated by means of a video camera.

6. The method defined in claim 5 wherein said video camera is operatively connected to a color CRT monitor, further comprising the step of displaying the pictorial image of the face of said individual on said monitor superimposed on an image of a purchase instrument selected from the group including a check, a money order and a credit card.

7. The method defined in claim 6 wherein said purchase instrument has different formats and wherein said monitor is operatively connected to register means for storing signals coding the different formats of said purchase instrument, input means being operatively connected to said register means and

said monitor for changing the display on said monitor, further comprising the step of operating said input means to display different formats of said purchase instrument on said monitor with the pictorial image of the face of said individual superimposed on the different displayed formats of said purchase instrument.

8. The method defined in claim 7 further comprising the step of transmitting to said memory additional signals coding information including a format of said purchase instrument selected by said individual and a name and an address of said individual.

9. The method defined in claim 8 further comprising the steps of storing in said memory in digital form said additional signals, retrieving said additional signals from said memory, transmitting said additional signals from said memory to said machine means, and operating said machine means to produce a purchase instrument having said selected format and bearing said name, said address and the pictorial image of the face of said individual.

10. The method defined in claim 9 wherein said purchase instrument is a check.

11. A check produced by the method defined in claim 7.

12. A check produced by the method defined in claim 1.

13. A credit card produced by the method defined in claim 1.

14. The method defined in claim 2 further comprising the steps of optically scanning a signature of said individual, generating a series of additional signals coding said signature, transmitting said additional signals to said memory, storing said additional signals in said memory, retrieving said additional signals from said memory, transmitting said additional signals to said machine means, and operating said machine means to produce on said web a copy of said signature in accordance with said additional signals.

15. The method defined in claim 2 further comprising the steps of transmitting said signals from said memory to a CRT monitor and displaying the pictorial image of the face of said individual on said monitor.

16. The method defined in claim 2 further comprising the steps of generating a series of additional signals coding a pictorial image of the face of another individual, transmitting said additional signals to said memory, storing said additional signals in said memory, retrieving said additional signals from said

memory, transmitting said additional signals from said memory to said machine means, and operating said machine means to produce on said web the pictorial image of the face of said other individual.

17. The method defined in claim 1 wherein said step of generating comprises the step of retrieving said signals from a read-only memory incorporated in an identification card.

18. The method defined in claim 17 wherein said identification card is a credit card.

19. A check bearing a name and a pictorial facial image of an individual.

20. The check defined in claim 19 further bearing the name and pictorial image of another individual.

21. The check defined in claim 19 further bearing a reproduction of a signature of said individual.

22. The check defined in claim 19 wherein said check is a traveller's check.

23. The check defined in claim 19 wherein said check is a personal check.

24. An identification card including a read-only memory storing signals coding a pictorial image of a feature of an individual.

25. The identification card defined in claim 24 wherein said feature is the face of said individual.

26. The identification card defined in claim 24 wherein said card comprises a credit card.

27. An apparatus for preparing a purchase instrument selected from the group including a check, a money order and a credit card, said apparatus comprising:

image-coding means for generating a series of signals coding a pictorial image of a feature of an individual;

memory means operatively connected to said image-coding means for storing said signals;

machine means for producing on a web, in a visually detectable form, the pictorial image of said feature of said individual in accordance with said signals; and

transmission means operatively connected to said memory means, to said image-coding means and to said machine means for transmitting said signals to said memory means from said image-coding means and for subsequently transmitting said signals from said memory means to said machine means.

28. The apparatus defined in claim 27 wherein said transmission means includes a computer.

29. The apparatus defined in claim 27 wherein said feature includes the face of the individual.

30. The apparatus defined in claim 29 wherein said image-coding means includes a digital scanner for optically scanning a photograph of the face of said individual.

31. The apparatus defined in claim 29 wherein said image-coding means includes a video camera.

32. The apparatus defined in claim 31, further comprising display means including a color CRT monitor operatively connected to said video camera for displaying the pictorial image of the face of said individual superimposed on an image of a purchase instrument selected from the group including a check, a money order and a credit card.

33. The apparatus defined in claim 32 wherein said color monitor and said video camera are disposed at a station remotely located with respect to said memory means.

34. The apparatus defined in claim 32, further comprising register means at said monitor and operatively connected thereto for storing in digital form signals coding different formats of said purchase instrument, further comprising input means operatively coupled to said register means and to said monitor for changing the display on said monitor to show different formats of said purchase instrument with the pictorial image of the face of said individual superimposed on the different displayed formats.

35. The apparatus defined in claim 32 wherein said image-coding means includes a read-only memory incorporated in an identification card, said image-coding means further including reading means for retrieving said signals from said read-only memory.

36. The apparatus defined in claim 27 wherein said machine means includes a phototypesetter.

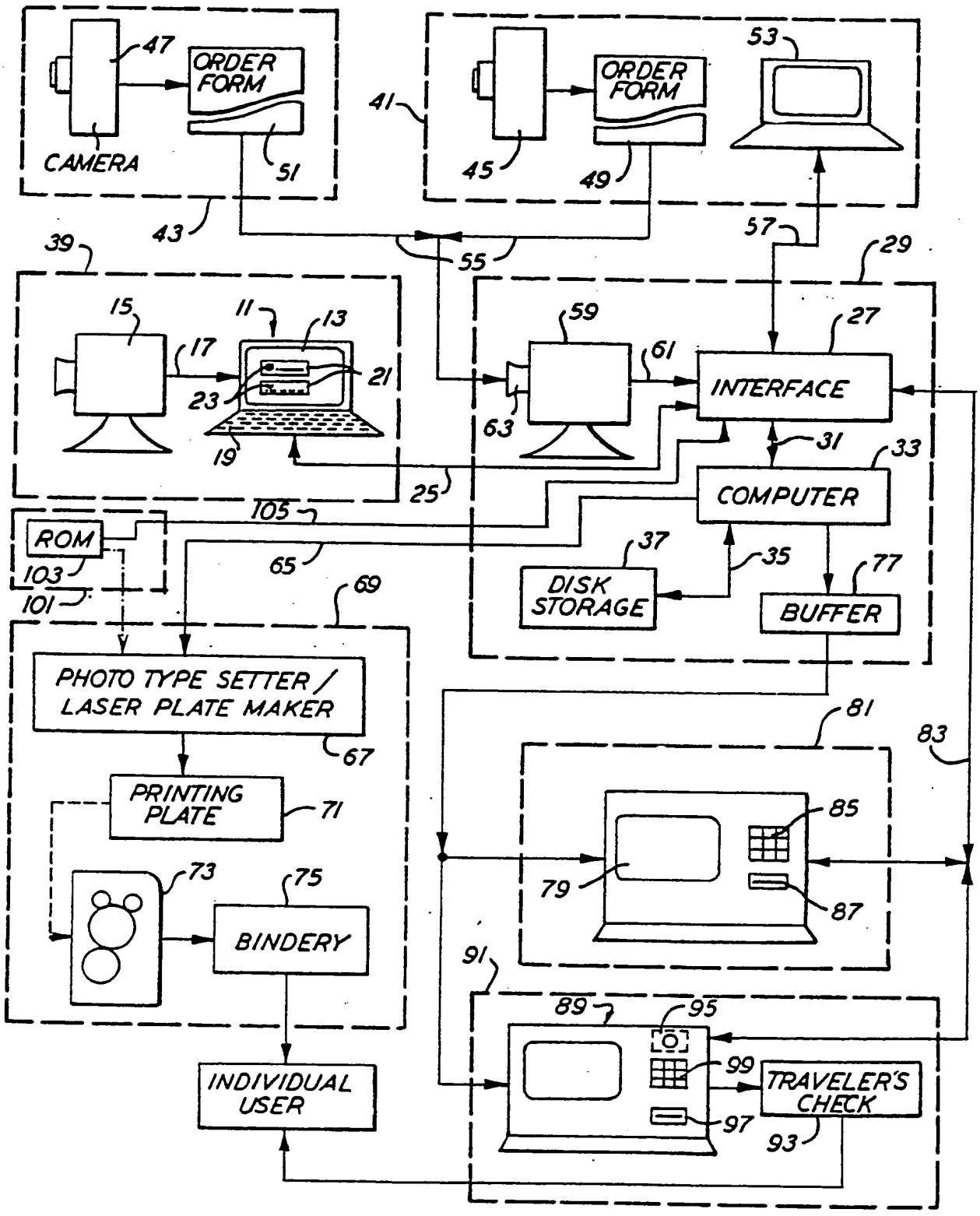
37. A method for verifying that a person attempting to make a purchase by tendering a purchase instrument selected from the group including a check, a credit card and a money order is in proper possession of the tendered purchase instrument, said method comprising the steps of:

storing in a memory digital signals coding a

pictorial image of the face of a person who is properly authorized to tender the purchase instrument; and

transmitting said signals coding said pictorial image from said memory to a CRT monitor for enabling a visual comparison of said pictorial image with the visage of the person attempting to make a purchase by tendering said purchase instrument.

38. The method defind in claim 37 wherein said memory comprises a read-only memory incorporated in an identification card, said step of transmitting including the step of retrieving said signals from said read-only memory.



INTERNATIONAL SEARCH REPORT

International Application No PCT/US86/01276

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all) [3]

According to International Patent Classification (IPC) or to both National Classification and IPC

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US CL 235/487

II. FIELDS SEARCHED

Minimum Documentation Searched [4]

Classification System	Classification Symbols
US	235/380, 382, 457, 468, 487,488; 283/107, 111, 904; 358/256, 299

Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched [5]

III. DOCUMENTS CONSIDERED TO BE RELEVANT [14]

Category *	Citation of Document, [16] with indication, where appropriate, of the relevant passages [17]	Relevant to Claim No. [18]
Y	US, A, 3,896,266 (WATERBURY) 22 July 1975, SEE ENTIRE DOCUMENT	1-38
Y	US, A, 3,925,602 (DOI ET AL) 09 December 1975, SEE ENTIRE DOCUMENT	1-38
Y	US, A, 3,985,998 (CRAFTON) 12 October 1976, SEE ENTIRE DOCUMENT	1-38
Y	US, A, 4,052,739 (WADA ET AL) 04 October 1977, SEE ENTIRE DOCUMENT	1-38
Y	US, A 4,467,209(MAURER ET AL) 21 August 1984, SEE ENTIRE DOCUMENT	1-38
Y,P	US, A, 4,529,870 (CHAUM) 16 July 1985, SEE ENTIRE DOCUMENT	1-38

* Special categories of cited documents: [15]

"A" document defining the general state of the art which is not considered to be of particular relevance

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"&" document member of the same patent family

IV. CERTIFICATION

Date of the Actual Completion of the International Search [2]	Date of Mailing of this International Search Report [2]
29 July 1986	20 AUG 1986
International Searching Authority [1]	Signature of Authorized Officer [20]
ISA/US	David L. Trafton

Form PCT/ISA/210 (second sheet) (October 1981)